

We claim:

1. A wireless local loop system comprising:
a network utilization manager;
at least one base station including an antenna, a radio, a modem and a communication system; and
a plurality of subscriber stations, each including an antenna, a radio unit and modem to exchange information with said at least one base station, at least two subscriber communications ports and a subscriber utilization client operable with said network utilization manager to assign capacity in said system to at least one of said two subscriber communications ports to create a desired connection between said base station and said at least one subscriber communication port.
2. The wireless local loop system as claimed in claim 1 wherein each said subscriber station requests said network utilization manager to establish a connection to said at least one subscriber communication port, said network utilization manager determining a required data rate for said connection from said request.
3. The wireless local loop system as claimed in claim 2 wherein said network utilization manager determines both a required data rate and a desired data rate from said request.
4. The wireless local loop system as claimed in claim 2 wherein said network utilization manager further determines at least one QoS level required for said connection.
5. The wireless local loop system as claimed in claim 2 wherein said network utilization manager further determines both at least one QoS level required for said connection and at least one QoS level desired for said connection from said request.
6. The wireless local loop system as claimed in claim 3 wherein monetary charges associated with said connection differ according to whether said connection is established at said required data rate or said desired data rate.
7. The wireless local loop system as claimed in claim 5 wherein monetary charges associated

with said connection differ according to whether said connection is established at said at least one required QoS level or said at least one desired QoS level desired for said connection.

8. The wireless local loop system as claimed in claim 1, wherein said base station is connected to a public switched telephone network via a PSTN gateway.

9. The wireless local loop system as claimed in claim 8 wherein said base station is connected to said PSTN gateway via a backhaul connection.

10. The wireless local loop system as claimed in claim 1, wherein said switch and router in said base station is connected to a packet network via a backhaul connection.

11. The wireless local loop system as claimed in claim 1 wherein at least one of said at least two subscriber communications ports is a data communication port.

12. The wireless local loop system as claimed in claim 11, wherein data communication port is an Ethernet port.

13. The wireless local loop system as claimed in claim 11, wherein said data communication port is a radio port for communication with radio-enabled devices adjacent said subscriber station.

14. The wireless local loop system of claim 11 comprising at least two telephony ports in addition to said data port.

15. The wireless local loop system of claim 14 wherein one of said at least two telephony ports is a data port for data modulated in the voice band.

16. The wireless local loop system as claimed in claim 1 including a prioritization table for at least one of said plurality of subscriber stations, and at least one of said subscriber utilization client in said subscriber station and said network utilization manager employing said prioritization table when assigning capacity to said at least one subscriber communications port in said at least one subscriber station.

17. The wireless local loop system as claimed in claim 16, wherein information in said priority table is downloaded to said subscriber station from said base station.

18. The wireless local loop system as claimed in claim 1 wherein said switch and router is operable to establish connections between subscriber stations serviced by the same base station.

19. The wireless local loop system as claimed in claim 1 wherein said base station comprises at least two sectors, each sector including an antenna, a radio, a modem and wherein said antenna is directional to define a reception footprint for each respective sector substantially different from the reception footprint of each other sector, each sector communicating with said router and wherein said network utilization manager manages and assigns resources on a per sector basis.

20. The wireless local loop system as claimed in claim 1 including at least two base stations and wherein said network utilization manager is implemented in a distributed manner on at least two of said at least two base stations.

21. The wireless local loop system as claimed in claim 10 and further including at least one network management center connected to said at least one base station via said backhaul, said network utilization manager being implemented in a distributed manner on said network management center and said at least one base station.

22. The wireless local loop system as claimed in claim 1 wherein said communication system comprises a router.

23. The wireless local loop system as claimed in claim 22 wherein said communication system further comprises a switch.

24. A subscriber station for a wireless local loop, comprising:
a radio operably connected between a modem and an antenna;
a processor operably connected between said modem and at least two communications ports, said processor communicating with a base station via said radio to manage at least the

allocation of data transmission capacity for a connection between said base station and at least one of said two communications ports.

25. The subscriber station as claimed in claim 24 wherein at least one of said two communications ports is a telephony port and at least another of said at least two ports is a data port.

26. The subscriber station as claimed in claim 24 wherein said processor communicates data transmission capacity requirements for a desired connection from either of said communication ports to said base station which evaluates said requirements before authorizing said connection.

27. The subscriber station as claimed in claim 26 wherein said processor also communicates at least one quality of service requirement for said desired connection to said base station which evaluates said data transmission capacity and quality of service requirements before authorizing said connection.

28. The subscriber station as claimed in one of claims 26 and 27 wherein said requirements are communicated by communicating the type of connection desired.

29. The subscriber station as claimed in claim 26 wherein said processor communicates to said base station data transmission capacity requirements and a higher level of desired level of data transmission capacity requirements for said desired connection and said base station determines which level of data transmission capacity requirements at which to authorize establishment of said connection.

30. The subscriber station as claimed in claim 29 wherein after said connection has been authorized at said desired level of data transmission capacity requirements, said subscriber station receives instruction from said base station to decrease the data transmission capacity authorized for said connection to a level below said desired level but at least equal to said required level.

31. The subscriber station as claimed in claim 24 wherein said processor further prioritizes the authorization of connections by said base station.

32. The subscriber station as claimed in claim 26 wherein said prioritization is based upon which of said at least two communication ports said connection is being authorized for.

33. The subscriber station as claimed in claim 24 wherein data transmission capacity and quality of service requirements for a connection are determined by said subscriber station based upon the type of connection to be established.

34. The subscriber station as claimed in claim 33 wherein said determination includes distinguishing between a desired voice connection and a desired data connection.

35. The subscriber station as claimed in claim 34 where for desired data connections, said determination further includes determining the type of data of said desired data connection.

36. The subscriber station as claimed in claim 35 wherein said type of data is determined by examining the internet protocol port to which said data is addressed.

37. A method of managing communications between at least one base station and a plurality of subscriber stations in a wireless local loop, said communication being accomplished over a radio channel shared by said base station and each of said subscriber stations, said base station performing the steps of:

(i) receiving a request from a subscriber station to create a desired connection between said base station and said subscriber station, said request indicating the type of said desired connection;

(ii) reviewing each received request and information representing the present allocation of said radio data transmission capacity to said subscriber stations to determine whether to allocate additional data transmission capacity to said subscriber station making said request, said review considering the amount of data transmission capacity and/or network resources required for said indicated type of connection;

(iii) allocating data transmission capacity and/or network resources and establishing said connection to said subscriber station as determined when it is determined to be appropriate to do so;

(iv) updating said maintained information to reflect the usage of said allocated data transmission capacity and/or network resources by each said subscriber station and/or to reflect data

transmission capacity which is no longer allocated to a subscriber station after a connection has terminated; and

(v) repeating steps (i) through (iv).

38. The method as claimed in claim 37 where in step (i) said desired type of connection is explicitly indicated.

39. The method as claimed in claim 37 where in step (i) said desired type of connection is determined by said base station.

40. The method as claimed in claim 39 where said determination is made in accordance with a predefined level of service for said subscriber station.

41. The method as claimed in claim 37 where in step (ii), said review further considers at least one Quality of Service parameter for said indicated type of connection.

42. The method of claim 37 wherein said subscriber station implements a prioritization of requests it makes for connections when it is desired to create at least a second connection.

43. The method of claim 37 where in step (ii) said review considers both the amount of data transmission capacity required for said indicated type of connection and an amount of data transmission capacity desired for said indicated type of connection and in step (iii) said desired amount of data transmission capacity is allocated to establish said connection to said subscriber station when it is determined to be appropriate to do so.

44. The method of claim 43 where an amount of data transmission capacity between said required and desired levels is allocated to said desired connection.

45. The method of claim 43 wherein if additional radio data transmission capacity is required by said base station after a connection is allocated a desired amount of radio data transmission capacity, said connection can have a proportion of the radio data transmission capacity allocated to it deallocated to obtain a reduced radio data transmission capacity utilization for said connection

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46. The subscriber station as claimed in claim 23 wherein said subscriber station distinguishes between voice communications and facsimile or data communications at said telephony port.